WHAT IS CLAIMED IS:

1. A fuel-cell which has at least one direct-alcohol fuel cell , the cell having a structure comprising:

- a first electrode;
- a second electrode;
- an electrolyte arranged between the first electrode and the second electrode;
- means for conducting electrical current to the first electrode and
- the second electrode,

wherein said structure is miniaturized, made up of a plurality of layers set on top of one another and associated in an unremovable way to a flexible substrate.

2. The fuel-cell according to Claim 1, wherein there is provided a plurality of said cells on the same flexible substrate, associated to which, in an unremovable way, is the miniaturized layer structure of each cell.

3. The fuel-cell according to Claim 1, wherein the flexible substrate is made of polymeric material, in particular Kapton®.

4. The fuel-cell according to Claim 2, wherein associated to the flexible substrate, in an unremovable way, are delivery means for delivering a fuel to each cell and discharge means for emptying water from each cell.

5. The fuel-cell according to Claim 2, wherein associated to the flexible substrate in an unremovable way are conducting paths, which electrically connect each cell to the next one.

6. The fuel-cell according to Claim 1 or Claim 2, wherein the means for conducting electrical current comprise a first layer of metallic material resting on the flexible substrate and in that the first electrode

comprises an anodic catalyst in contact with said first layer.

7. The fuel-cell according to Claim 1 or Claim 2, wherein the means for conducting electrical current comprise a second layer of metallic material resting on the electrolyte and in that the second electrode comprises a cathodic catalyst in contact with said second layer.

8. The fuel-cell according to Claim 7, wherein on said second layer there is present a protective layer, in particular made of polymeric material.

9. The fuel-cell according to Claim 1 or Claim 2, wherein the electrolyte is in the form of a membrane, in particular made of Naphion.

10. The fuel-cell according to Claim 1 or Claim 2, wherein the electrolyte has a composite structure comprising Naphion and zeolite.

11. The fuel-cell according to Claim 1 or Claim 2, wherein the means for conducting electrical current to the first electrode and the second electrode are in the form of metallic layers.

12. The fuel-cell according to Claim 1, wherein at least one between the first electrode and the second electrode comprises a catalyst containing granules of carbon and a noble metal selected in the group consisting of platinum, palladium, rhodium, iridium, osmium and ruthenium.

13. The fuel-cell according to Claim 1, wherein at least one between the first electrode and the second electrode comprises a catalyst containing a material selected in the group consisting of fullerenes, carbon nanotubes, carbon nanofibres.

14. The fuel-cell according to Claim 1, wherein at least one between the first electrode and the second electrode comprises a catalyst deposited on zeolite

material.

15. The fuel-cell according to Claim 1, wherein it comprises a first control part and a second energy-generation part, the first part having a micro-pump, which is operative for regulating the supply of the fuel to the cells, the micro-pump comprising:

- a respective inlet branch, for connection to a source of the fuel; and
- a delivery branch, for connection to the delivery means.

16. The fuel-cell according to Claim 15, wherein the pump is of the piezoelectric type and made using MEMS (*Micro Electro-Mechanical Systems*) technology.

17. The fuel-cell according to Claim 15, wherein the micro-pump is operative for maintaining the cells moist in order to prevent deterioration of said miniaturized structure.

18. The fuel-cell according to Claim 15, wherein the first part comprises a microcontroller for the control of the micro-pump.

19. The fuel-cell according to Claim 15, wherein the first part comprises a supercapacitor provided for electrical connection to a cell.

20. The fuel-cell according to Claim 19, wherein the supercapacitor is operative for supplying the microcontroller.

21. The fuel-cell according to Claim 15, wherein the second part comprises the flexible substrate with the respective cell or cells, and that the first part is distinct from the flexible substrate and provided for being connected electrically and hydraulically to a cell of the second part.

22. The fuel-cell according to Claim 1 or Claim 2, wherein the flexible substrate is in the form of a ribbon developing in length and capable of being rolled

up.

23. The fuel-cell according to Claim 1 or Claim 2, wherein the fuel is methanol in aqueous solution.

24. A method for the fabrication of a fuel-cell, which has at least one direct-alcohol fuel cell, the cell comprising: a first electrode; a second electrode; an electrolyte, arranged between the first electrode and the second electrode; means for conducting electrical current to the first electrode and the second electrode, said method being wherein there are envisaged the steps of:

i) obtaining a flexible substrate in the form of a ribbon that develops in length;

ii) associating to the flexible substrate, in an unremovable way, a plurality of said cells, the latter each having a structure with layers set on top of one another obtained by means of micromachining;

iii) cutting the flexible substrate in order to obtain a piece comprising a desired number of said cells,

iv) electrically connecting a cell of the piece to a control device, the ensemble of the piece and of the control device forming the fuel-cell.

25. The method according to Claim 24, wherein before step iii) there is envisaged the step of associating to the flexible substrate delivery means for delivering the fuel to each cell and discharge means for emptying water from each cell.

26. The method according to Claim 24, wherein before step iii) there is envisaged the step of associating to the flexible substrate conducting paths that electrically connect two cells together.

27. The method according to Claim 25, wherein step iv) comprises a substep of hydraulic connection of a pump forming part of said device to the delivery means of a cell of the piece.

28. The method according to Claim 26, wherein step iv) comprises a substep of electrical connection of a supercapacitor forming part of said device to the conducting paths of a cell of the piece.

29. The method according to Claim 24, wherein the flexible substrate is wound up after step iii) to form a roll.

30. The method according to Claim 28, wherein the portion of flexible substrate designed to form the piece is unwound from the roll, in order to carry out step iv).